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ABSTRACT

This instructional unit for grades eight and nine tells why and how American small towns declined as a result of the availability and acceptance of automobiles, and it tells of the growth of suburbs and their effect on the city. The learning activities also relate the story of the demand for cars and explain the drain on the cities' sense of space, clean air, and safe streets. In one of the lessons, the students simulate a court trial on the charge - "The Car Has Done Permanent Injury to Humanity." There are four lessons in this unit. They are designed to fit into existing segments of instruction in U.S. history and civics courses. Complete teacher and student materials are provided. (BE)

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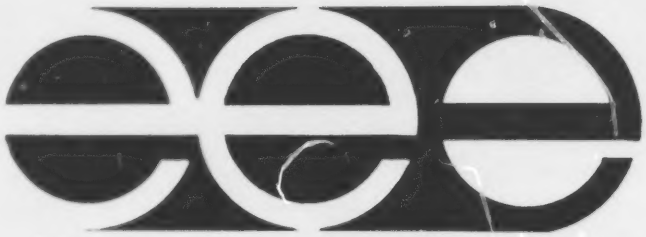

Interdisciplinary Student/Teacher Materials in Energy, the Environment, and the Economy

4

Transportation and the City

Grades 8, 9

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Transportation and the City
Grades 8, 9

National Science Teachers Association
1742 Connecticut Avenue, N.W.
Washington, D.C. 20009

This instructional unit was produced by NSTA's Project for an Energy-Enriched Curriculum under contract #EX-76C-10-3841 from the Education Programs Branch, Office of Public Affairs, the U.S. Energy Research and Development Administration (now U.S. Department of Energy). The NSTA project staff is as follows:

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October 1977
John M. Fowler
Project Director

Transportation and the City

Introduction

A major thrust of American invention in the last decade of the nineteenth century and for most of the twentieth century was toward the development of the suburb, which was an outgrowth of the single-passenger automobile. This unit tells why and how American small towns declined as a result of the availability and acceptance of automobiles, and it tells of the growth of suburbs and their effect on the city. The learning activities also relate the story of the demand for cars and explain the drain on the cities' sense of space, clean air, and safe streets. The great demand for cars strained the resources of many cities and small towns and called for a reconsideration of the balance that now exists between the needs of American society and its wants. The consequences of replacing the number of cars in this country every 11 years -- there are now more than 100 million cars on the roads in the United States -- are many. Air pollution, for instance, can damage trees and plants and aggravate the lungs in human beings. Traffic snarls and insufficient parking spaces continue to plague city governments who need the taxes of city workers; and finally, but by no means last in priority, there is the strain the car places on our available energy resources. In this unit, students will become acquainted with some of the implications of supply and demand on prices, on choices, and on lifestyle. They will end the unit by discussing some possible solutions to our energy consumption problem in urban transportation.

The learning activities in this packet have been designed to fit into existing segments of instruction in U.S. history and civics courses at the middle school level.

Units in this packet, along with brief descriptions of the subject matter, follow.

1.	Getting There	Buying a "dream car," the zingier the better, but with a big "If." You have to be able to buy the gas!
2.	Shut Down by Tin Lizzie	Studying the effects of the car-for-everybody on the American small town.
3.	The City of Windshields	The automobile introduces Los Angeles -- the city that a car built.
4.	The Car On Trial	Students simulate a court trial on the charge: the car has done permanent injury to humanity. How do you find it? Guilty or innocent?

Teachers' Manual

1. Getting There

Overview

We begin this lesson with a topic that has wide appeal for students -- making a wish come true. Here the student can pick any car he or she wishes, the zingier the better, with money no object. It is later in the progress of the lesson that we let the student see the miles per gallon rate for his dream car. Since our game rule says he or she must be able to afford to run his dream car, some revised thinking may be in store. Facts drawn from charts and tables will help students draw more exact conclusions and sharpen their judgment.

Objectives

Students should be able to:

1. Calculate passenger miles per gallon for various vehicles carrying different loads.
2. Explain the difference between miles per gallon (mpg) and passenger miles per gallon (pmpg).
3. Discover some of the advantages of urban mass transportation systems and predict some trends for these systems and the single-passenger automobile.

Target Audience

Social Studies

Materials

Dittoed class sets of student activity materials

Time Allotment

One - two class periods

Teaching Strategies

Begin the lesson with a topic many students know best -- the family car. You may wish to introduce a lively debate with questions similar to these:

Suppose you could buy any new car or van you like. Money is no object. What kind would you pick? Keep one thing in mind, however. After you "buy" your dream car, you have to be able to pay for the gas, oil, and all repairs. Have students make

their selections. They may call out their car, or you may wish to have them write them on the board or on paper.

"What features on an auto are the most important to you?" Have students list these as general topics, then you may call for a vote of agreement on each one. How many of you think this feature is important? Take count, then proceed to the next feature. Students will probably mention some or all of the following:

____Good-looking paint job

____Sporty lines

____Whitewalls

____Air conditioning

____Good gas mileage

____Powerful engine

____Convertible

____Big size

____Four-speed transmission

____Designer interiors (customized vans, denim upholstery, Pucci, etc.)

____Vinyl top

____Engine reliability

Suggest to the students that they think about their "dream" car again. Ask, "Why did you pick this car? What would you use it for?" As students think about these questions and make suggestions, distribute the chart showing the names of 1976 cars, and ask students to find their "dream" car on the list. (If they cannot find it, have them choose a car from the list that is a good second choice for them.)

Have students read the heading before answering the following questions:

What is the gas mileage rate for your car? If new regulations came out saying that cars must get 20 miles to the gallon, does your car qualify? How much would gasoline cost you each week for your car, if gasoline costs 65 cents a gallon, and you travel 250 miles a week? Have students figure their costs.

Suppose your car gets 20 MPG. Divide the number of miles traveled -- 250 divided by 20. This result will be the number of gallons used. Then multiply that figure by 65 (250 divided by 20 multiplied by 65 = $8.12). What will your "dream" car gasoline costs be?

Conclude this part of the lesson by suggesting the following question: "Can you afford your dream car?" Many students will be reluctant to give up their dream. Use this opportunity to introduce students to a consideration of alternate transportation systems. Should we begin to think of a car as transportation rather than a "dream machine?" Why are there so few mass transportation systems in American cities? What are some advantages in using buses, commuter trains, and airplanes? How might more automobiles cause more city problems?

Extended Learning Activities

Either in conjunction with the above activity, or as a separate activity, have students consider the concept of passenger miles per gallon. This is a term that refers to the number of people that can be carried by an amount of fuel for one mile. PMPG is figured by dividing the number of people in the carrier into the amount of fuel used by the carrier. Once you have helped the students understand this, you can then lead them to consider the relationship between the single-passenger car and efficiency.

Distribute the tables (1 and 2). Ask the students, "Which is the most efficient type of transportation? The least efficient? How can we determine efficiency?" (Keep the focus on efficiency by asking: "Would the same amount of gasoline used to carry one individual in the average commuting automobile carry at least 10 persons the same distance in a bus, train, or jet airplane?")

Have students complete the chart. Then answer the questions.

Table I

1. Which type of urban transportation listed on Table 1 gets the most miles from each gallon of gasoline? *(Automobile.)*

Table II

2. Which vehicle gets the most miles per gallon (MPG)? *(Automobile.)*
3. Which uses the most fuel for a 20 mile trip into the city? *(Train.)*
4. Which uses the most fuel per person for a 20 mile trip into the city? *(Van with one person.)*
5. Which uses the least amount of fuel per person for this trip? *(Bus with 40 persons.)*
6. If the 1000 people who rode on the commuter train drove a car to the city instead, how much additional fuel would be used? *(1000 persons would use 1110 gallons of gasoline, compared to 200 gallons, so an additional 910 gallons would be used.)*
7. How much fuel is saved by having 40 people ride a bus instead of using 20 cars with two people in each car? *(22.2 gallons instead of 6.1 gallons -- so 16.1 gallons of fuel are saved.)*

Write a summary paragraph for each question below.

1. Are mass transit systems, like buses and commuter trains, always more efficient than cars? Explain. *(Mass transit types of transportation are energy efficient when they are running with full passenger loads.)*

2. Suppose the mayor of your city appointed you as the new director of mass transit systems. He or she wants your ideas on the serious problem of too many cars in the city and the underused public transportation facilities. What would you say in a letter to the mayor? *(Encouraging people to use mass transit facilities continues to be very difficult. In theory, people should turn to mass transit facilities because they are more energy-saving. In fact, people will not use them until they can save time and money, and have greater convenience than they do with the car. There are some things that city governments do today to encourage higher use of mass transit facilities, but they are only partly working. Some ways are by raising parking fees, reducing the number of parking lots, partial subsidizing of bus and train costs, and supplying fleets of minibuses. These provide the kind of door-to-door convenience that attracts passengers and discourages the use of the automobile.)*

2. Shut Down by Tin Lizzie

Overview

This lesson acquaints students with some of the changes the automobile brought to the American small town. It asks them to think about changes -- in the ways people live together and in the quality of life that is often affected by rapid change.

Objectives

Students should be able to:

1. Contrast the "good old days" with the pleasures of living today, now that we have the automobile and all the other oil and natural gas products.
2. Gain increasing competency in conducting an interview.

Materials

Dittoed class sets of the reading:
"Shut Down by Tin Lizzie"
Class sets of interview inventory

Time Allotment

One - two class periods

Teaching Strategies

Have the students turn at once to the reading. After they have read it silently, ask the class to answer the questions that follow the reading. Use their responses to discuss the advantages and disadvantages of living in a small town. You may also wish to introduce a discussion of the effects of change. Do you think life has become less satisfying as it has become more complex? How did the coming of Tin Lizzie make life more enjoyable and, at the same time, less enjoyable?

Distribute the interview inventories, and have students interview someone who is old enough to remember what life was like thirty or forty years ago. At a later time, have students read their interviews in the class setting and summarize their findings.

Extended Learning Activities	Construct a model of the first Ford automobile. Have students begin a study of history of their own neighborhood, visit the historic sites, study old maps, talk to the old people, and collect some of the things people used. In such an activity, you may help your students understand that such a way of learning is a way of sharing rich experiences that nourish each generation.

Student Questions

1. Henry Ford did not make the first automobile. What was the important first that he did do? *(Henry Ford introduced Americans to the first low-priced, mass-produced cars.)*

2. How did the Model T change the kinds of entertainment people once enjoyed in small towns? *(Entertainment and recreation changed from the at-home, with-our-neighbors kind to wider ranging ones found in the larger towns.)*

3. How did school change with the advent of better cars and roads? *(Better roads and school buses introduced the comprehensive high school -- larger, more remote, with consolidated and less personal and independent school districts.)*

4. What advantages did larger towns offer over small villages and towns? *(Larger towns offered more services and more activities.)*

5. How did the automobile have advantages over train travel? *(The automobile offered more flexibility than trains. People using trains had to depend on rigid schedules and could count on a round trip taking more time because of rail routes. An overnight stay would therefore make a train journey more expensive than going by car.)*

6. How did the automobile make more leisure time available? *(Since the car made one-day trips possible and practical, more recreational trips could be arranged on Saturdays or Sundays. Once landlocked and dependent on the railroads, people became more flexible and less work-oriented with the automobile.)*

7. It has been said that the automobile made people less dependent on each other. How would you explain this statement? *(People could get in their cars, and as the saying goes, take off by themselves if no one else could come along. They no longer depended on services offered by trainmen, local shopkeepers, or members of their family for services and leisure-time activities.)*

3. The City of Windshields

Overview

Los Angeles, California is one of our largest metropolitan areas and, like others, it is faced with many problems. We will focus our attention on some of the effects of the automobile on the design of the city and on the everyday lives of the people.

Objectives

Students should be able to:

1. Describe how the automobile has affected the environment of Los Angeles.
2. List the positive and negative aspects of the automobile on the environment and on the citizen's sense of time and space.
3. Explain the term photochemical smog and describe its effects on people and things.

Target Audience

U.S. geography, history, civics, and contemporary issues courses

Materials

Class copies of the reading:
"The City of Windshields"

Time Allotment

One class period

Teaching Strategies

One very good way to arouse intelligent interest in this lesson is to invite a specialist in city transportation to talk to the class on traffic and traffic management. Among the many people possibly available are police officers, a staff person from the mayor's office, a town planner, a sociologist, or a staff member from the local transportation office. The interest in this lesson is not to make everyone a traffic expert, but to foster good attitudes toward thinking about alternatives to the automobile.

Have students turn to the reading and answer the questions. You may wish to have one member of the class read the article aloud, and to have students respond orally to the set of questions, and in this way, to promote wider discussion of the issues.

Student Questions

1. How can you explain the statement: Los Angeles is normally seen through a windshield? *(Most people in Los Angeles rely on the single-passenger car. Students may find it interesting to know that for every baby born each year, two cars are made.)*

2. When and how do the people of Los Angeles use their automobiles? *(People use their cars for getting to and from work, taking children to school, going shopping, eating out, and finding places of recreation -- to mention only a few.)*

3. How has the automobile changed the appearance of Los Angeles? *(Los Angeles, perhaps more than any other American city, is a product of the automobile. Approximately 60% of the land area is used for parking lots, roads, gasoline service stations, and repair garages. Even artificial plants decorate the highways, indicating that the pollutants are very great.)*

4. Many large metropolitan areas have mass transit systems. Why has Los Angeles refused so far to construct one? *(So far Angelinos have resisted efforts of large-scale mass transit systems. One reason may be their deeply-ingrained love for the independence of their automobiles.)*

5. How has the automobile affected the Los Angelino's sense of time and space? *(The article certainly suggests that convenience rather than a better sense of time and space takes priority in the minds of most Angelinos.)*

6. What is a major problem facing all citizens of Los Angeles because of the automobile? *(Photochemical smog is a major problem. This soupy, eye-watering smog is caused by a mixture of the chemicals that come from the car's exhaust pipes with*

sunlight. It is painful and irritating to the eyes and lungs, but no deaths have resulted from this kind of smog. However, automobile smog kills trees and plants. The automobile is also responsible for two other pollutants, carbon monoxide and lead. Carbon monoxide can be deadly. Such closed-in spaces, such as tunnels, can cause deadly buildups of carbon monoxide very quickly. Lead is released by burning leaded gasoline. Since it accumulates in the body, we must watch out for the long-range effects of lead exposure.)

7. What can the city do to solve this problem? *(Student answers will vary. Certainly, some of the discussion should involve the possibilities of mass transit systems.)*

8. How has the city attempted to control smog? *(Los Angeles has established an area-wide Air Pollution Control Board which has wide powers to curtail polluting devices. If fully implemented, the policies could bring air pollution under control.)*

9. Pretend you are a citizen of the city of Los Angeles or any large city. Write a letter to your mayor or city manager stating the problems caused by the automobile. State how you would solve the problem. What alternate transportations would you suggest? How would you encourage people to adopt your ideas? *(Student letters should consist of more than a list of complaints. Use this activity to help students develop better skills in writing exposition.)*

4. The Car on Trial

Overview

America, in the 1970's, is a mixture of problems and promise. This activity asks students to investigate the problems caused by the car in America. It also asks them to weigh the promise of the car against the problems it has produced.

Objectives

Students should be able to:

1. Consider some of the automobile's positive and negative influences on our lives.
2. Role-play a trial to determine the guilt or innocence of the car under the charge: The car has done permanent injury to humanity.

Target Audience

Social Studies

Time Allotment

Five days

Teaching Strategies

Day 1: Opening the Lesson

Ask students to think of important technological inventions directly touching our lives, which were invented in the last 50 years. Ask a student to lead a recall session and to list on the board all those inventions suggested by the class. Next, ask each student to list all the ways he or she has used the automobile (including trucks, buses, vans, etc.) during the last 24 hours. How has the car revolutionized our day-to-day living? What are the advantages of the car? What are the disadvantages? What has been the effect of the car on energy resources, particularly oil (and gasoline), in the last 50 years?

Day 2: Developing the Lesson

Have students make notes in their notebooks adding the following questions for discussion to the previous day's.

1. Can a person turn his or her back on the car? Can we go back to another way of life?
2. Are there groups in America who do this? What transportation systems do the Amish use? How would you interpret this cartoon?

"What's an energy crisis, Pa?"

3. How do other groups, such as individuals in a commune get around without using a car? What are the advantages of riding a bike? Disadvantages?
4. What effect has the automobile had on our educational system? How have course offerings been affected? Time in school -- how has this been affected? How has the automobile affected the design of school buildings? How has it affected where the school itself is located?
5. What effect has the automobile had on places where we shop?
6. How has it influenced where we live?
7. How has the automobile influenced our use of leisure time?
8. How has it influenced the manner in which we buy things to eat?

Day 3, Day 4, and Day 5: The Car Versus the People of the United States (A Simulation of a Court Trial)

1. Conduct a brainstorming session about trials. What is the purpose of a trial? What does a jury do? What can you remember about seeing trials on television?

2. Explain to the class that they are going to put the automobile on trial; that it has been accused of doing permanent injury to humanity. During the next three days, the class will determine the guilt or innocence of the charge. Ask for student volunteers for the following roles:

Prosecution Group	Defense Group	Judicial Group
Prosecutors (2)	Defense Attorneys (2)	Judge (or Court Clerk) (1)
Prosecuting Witnesses and Consultants (4-8 Students)	Defense Witnesses and Consultants (4-8 Students)	Bailiff (1)
		Court Reporter (1)

3. When students have assumed their roles, have them divide into the three preparation groups and begin their preparation activities.

A. The prosecution group might consider:

(1) List of the ways the automobile has been harmful to people. For example, polluted air and water (at the factory site), drain on fossil fuel resources, particularly oil, and urban sprawl. Students might find it useful to organize the problems connected with the automobile into the following headings: Traffic Snarls, Growth of Suburbs, High Use of Gasoline and Oil, Visual Pollution (including proliferation of roadside signs), Highway Deaths, Safety on Urban Streets, Air Pollution, and Accelerated Changes in the Lives of People -- not all to the good.

(2) Prepare witnesses to testify to the existence of specific abuses. For example, use data and charts, tables, and graphs. These are readily available in most school social studies texts, in library books, and vertical files. An additional good source is the Energy-Environment Source Book by John M. Fowler (Washington: National Science Teachers Association) 1975.

B. The preparation activities of the defense group might include:

(1) List of ways in which the automobile has berefited people. For example, it has created jobs in manufacturing automobiles and improved

work that requires a substantial amount of traveling, such as sales. Shorter workweek? Consider lessened travel time to and from places of work. Consider the automobile's importance in the nation's economy. Consider the laborsaving qualities of the automobile in hauling and transporting things. Have students anticipate the categories and arguments the prosecution will present and prepare a defense against these arguments.

(2) Prepare witnesses to testify on behalf of the automobile. For example, "Before the automobile came along, I had to spend hours traveling to my job on the train. Even getting to the station and back each day required so much extra time that I could not help my patients as often or as much. Now I can see many more patients each day in my office, and I can get to hospitals more quickly. I can now help more people than before." Have students develop specific roles similar to this one.

C. The preparation activities for the judicial group might include:

Have the group go to another classroom, or find a space out of earshot of the defense and prosecution groups so that they will not be influenced by these preparations. (Perhaps you could invite another class to serve as jurors or as an audience in the courtroom, if your class is small or if you would like to use thoroughly unbiased judgments.) The bailiff and the court reporter should go to the library and research the duties of the positions they will fill. The judge should research his job, either in the library, or consult the teacher. The judge, bailiff, and court reporter should arrange the furniture to resemble a courtroom. Borrow a flag from the multipurpose room for some courtroom ambiance, and perhaps ask the office staff or the principal to lend his heavier, leather furniture.

The Trial

4. Allow at least one class period for the trial. You may wish to videotape the trial for other classes to see at a later time, if your school has such equipment available. Courtroom procedure you may want to follow should include the following: (also see Outline of Steps in a Jury Trial, page 42)

A. Before the trial begins, the jurors swear to decide the facts fairly. Court clerk will give the oath to the jurors. Below is the oath taken by the witnesses.

Jurors' Oath

You do solemnly promise or declare that you shall well and truly try the issues joined between (plaintiff) and (defendant) and a true verdict give according to the evidence.

Response: We so swear.

B. The judge calls the court to order and states the charge against the automobile. (You may want to borrow a choir robe for the judge or use a graduation gown.)

C. The judge and jury hear testimony of witnesses for both sides.

Witnesses' Oath

Do you swear to tell the truth, the whole truth, and nothing but the truth?

Response: I do.

Note to the Teacher: You might like to discuss why the words: "the whole truth and nothing but the truth," are added. Why not ask: Do you swear to tell the truth? What is the difference between these phrases?

The prosecution will present its side first. After the defense has been heard, a cross-examination period is held. Witnesses previously sworn can be recalled and their testimony rebutted.

The attorneys for both sides sum up their arguments before the jury starts its deliberation.

5. The judge charges the jury, explaining the possible verdicts it could deliver in a civil case. (You may decide that the customary unanimous vote is not necessary for a verdict of innocent or guilty.)

Extended Learning Activities

1. Conduct a debriefing period as a culminating or evaluating part of this lesson. Are there other forms of transportation besides passenger cars? Do these forms use less oil (and gasoline) per person per mile? (Refer to Lesson 1 of this packet.)

2. This might be a good time to refer again to the questions introduced during the Developing the Lesson portion. Question 1, for instance, asks: Can a person turn his or her back on the car? Can we go back to another way of life? Here, students might consider how much a leisure society -- and the way of life that is peculiar to it -- cannot be ignored. There is more space in America, there are more places to go and more people able to go to them, so they use more gasoline because they use the car to get there. As Henry Fairlie said in a recent article reprinted in *The Washington Post* (Sunday, July 31, 1977):

"Americans in their hundreds of thousands now sail in the great bays and estuaries of their country; they get there by car. They now backpack in the wilderness and in the mountains; they get there by car. They now ski down the slopes of their country in winter and climb them in the summer; they get there by car. They go to their beaches to swim or to laze; they get there by car. They go to the desert in spring and find its beauties; they get there by car. Even in the cities during the week, they go increasingly to the tennis courts, swimming pools, and golf courses; they get there often by car. And these activities add up to millions upon millions, people using their country all year round.

They need gasoline even to get to the places where they can then do what needs no gasoline."

Is there a true car culture? Can we turn our back on the car? What will the inevitable trade-offs be? How can culture be changed?

3. There is an excellent series of lesson plans covering all phases of bicycle traveling available for Grades 6-9 at the Department of Transportation. Write to them at the Department of Transportation, 400 7th Street, S.W., Washington, D.C., or place your order to Abt Publications, 55 Wheeler Street, Cambridge, Massachusetts 02138.

4. Points to consider on the ending of the local community school and the rise of the large consolidated school are available in most social studies textbooks. Debate generally surrounds the positive and negative aspects of size, course offerings, complexity of administration, student feelings of isolation, etc.

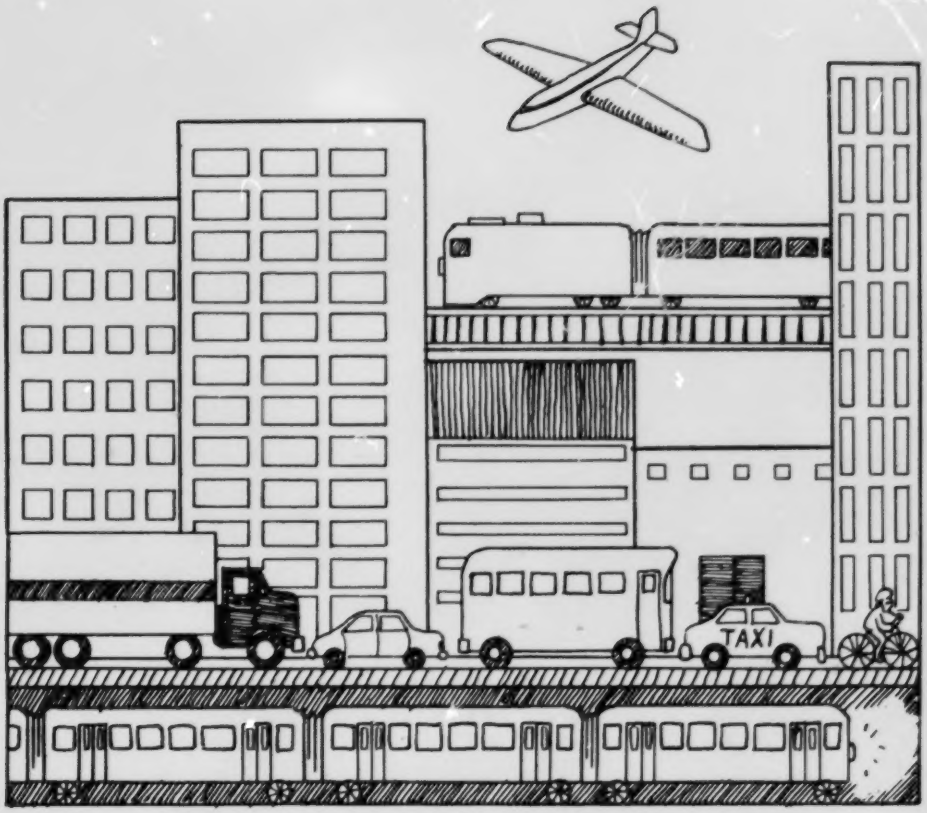
5. Students might mention the influence the car has had on the development of large shopping centers.

6. The growth of the suburban communities is inextricably linked to the widespread use of the family car -- or two or three of them.

7. A leisure society depends heavily on the car. In question 2, the suggested points for discussion may be reintroduced to help students discuss the impact of the car on leisure time activities.

8. Students should discuss to what extent transportation -- in particular, the car -- is involved in convenience of food operations. Discuss the changes in food preparation and distribution over the last ten years. What has been the effect of the car on operations such as McDonald's?

Student Guide



Activity 1 - Getting There

Table I

TYPES OF URBAN TRANSPORTATION	FUEL MILEAGE (AVERAGE) (MPG = Miles Per Gallon)
Automobile	18 MPG
Van	16 MPG
Bus	3.3 MPG
Commuter Train	.1 MPG
DC Jet	.25 MPG

Table II

Form of Transportation	Number of People	MPG	Fuel Needed for 20 Mile Trip (In Gallons)	Fuel Per Person (PMPG)
Car	1	18	1.11	1.11
Car	2	18	1.11	.56
Car	4	18	1.11	.28
Van	1	16	1.25	1.25
Van	2	16	1.25	.630
Van	8	16	1.25	.165
Bus	5	3.3	6.1	1.2
Bus	20	3.3	6.1	.31
Bus	40	3.3	6.1	.15
Train	1,000	.1	200	.20
Airplane	100	.25	80	.80

Remember: Passenger miles per gallon is arrived at by dividing the number of people into the amount of fuel used.

Student Questions

Table I

1. Which type of urban transportation listed on Table 1 gets the most miles from each gallon of gasoline?

Table II

2. Which vehicle gets the most miles per gallon (MPG)?
3. Which uses the most fuel for a 20 mile trip into the city?
4. Which uses the most fuel per person for a 20 mile trip into the city?
5. Which uses the least amount of fuel per person for this trip?
6. If the 1000 people who rode on the commuter train, drove a car to the city instead, how much additional fuel would be used?
7. How much fuel is saved by having 40 people ride a bus instead of using 20 cars with two people in each car?

Write a summary paragraph for each question below.

1. Are mass transit systems, like buses and commuter trains, always more efficient than cars? Explain.

2. Suppose the mayor of your city appointed you as the new director of mass transit systems. He or she wants your ideas on the serious problem of too many cars in the city and the underused public transportation facilities. What would you say in a letter to the mayor?

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YOUR DREAM MACHINE
Student Activity Sheet

Model	Manufacturer	MPG
Chevette	GM-Chevrolet	36
Civic CVCC	Honda	44
Corolla Sedan	Toyota	32
Datsun B-210	Nissan	42
Datsun 200SX	Nissan	26
Accord CVCC	Honda	42
Celica GT	Toyota	26
Rabbit	Volkswagen	34
Fiat 128	Fiat	27
VW Station Wagon	Volkswagen	28
Opel (Isuzu)	Isuzu	27
Vega	GM-Chevrolet	28
Dodge Colt	Mitsubishi	35
Pinto	Ford	30
Mazda GLC	Toyo Kogyo	38
Mustang II	Ford	26
Datsun 280Z	Nissan	21
Volvo 244	Volvo	22
Gremlin	American Motors	23
Maverick	Ford	24
Volare	Chrysler-Plymouth	20
Nova	GM-Chevrolet	22
LTD II	Ford	17
GTO	GM-Pontiac	17
Trans Am	GM-Pontiac	17
Matador	American Motors	15
Cutlass Supreme	GM-Oldsmobile	18
Cougar	Ford	16
Ford	Ford	15
Buick Electra 225	GM-Buick	18
Plymouth	Chrysler-Plymouth	15
Silver Shadow	Rolls Royce	12
Chrysler	Chrysler-Plymouth	13
Bonneville	GM-Pontiac	17
Eldorado	GM-Cadillac	14
Buick Wagon	GM-Buick	18
Ford Wagon	Ford	13
Chrysler Wagon	Chrysler-Plymouth	12
Continental Mark V	Ford	13
Toronado	GM-Oldsmobile	15
Grand Prix	GM-Pontiac	17
Thunderbird	Ford	17
Mercedes 280 SE	Dailler-Benz	16
Seville	GM-Cadillac	16
Chevy Van V-8	GM-Chevrolet	18
Dodge Van V-8	Chrysler-Dodge	16
Ford Van V-8	Ford	16
VW Bus	Volkswagen	23

*January 1977 Gas Mileage from EPA City/Highway Test Cycle.
Source: "1977 Gas Mileage Guide for New Car Buyers," U.S. Environmental Protection Agency, January 1977 (Second Edition) Fuel Economy, Pueblo, Colorado 81009 -- Single Copies; Fuel Economy, FEA, DPM Room 6500, Washington, D.C. 20461 -- Bulk Copies.

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Activity 2 - Shut Down by Tin Lizzie

SHUT DOWN BY TIN LIZZIE

by Donald R. Harvey

Today, the countryside of the mid-western states is dotted with many once-thriving small towns, now little more than reminders of the vital role they formerly played in rural America. The advent of the automobile doomed them to the same fate as the mining town of the Old West when the ore ran out.

Prior to 1920, the horse-drawn vehicle and the railroad were the primary means of transportation. Most small towns were located from five to ten miles apart, usually along a railroad. They provided an essential initial stage in the flow of agricultural products to the markets of the large cities. Alongside the railroad tracks were usually a mill, grain elevator, and stock pens where farmers could market their cash crops and livestock.

A typical such town in Missouri had a population of slightly less than 500 in 1920. It was a lively, thriving trade center for people living within a radius of approximately five miles. It had two banks, two drugstores, six grocery and general merchandise stores, a furniture store, an undertaking parlor, a lumberyard, a livery stable, a blacksmith shop, a garage, three churches, and a hotel, in addition to the rail-side facilities mentioned above.

It also had its own school system from first grade through high school. No transportation was provided for students. Those living beyond reasonable walking distance rode horses before the car became commonplace. Students from outside the school district (approximately two miles square) paid a monthly tuition. The town elected its own school board, voted, and collected taxes.

The average family living in a small town was landlocked. Its only means of travel to another point was by the railroad. It had no need for horses for

work purposes and would not think of going to the expense of maintaining them for an occasional Sunday afternoon ride in the country. Adult residents of the small towns were work-oriented. Vacation trips and leisure were terms with which they were relatively unacquainted. The workweek consisted of six very long days, and Sunday was needed to rest up for Monday. Consequently, there was practically no opportunity for leisure as we know it.

Between 1910 and 1920, the manufacture of automobiles underwent enormous growth. Previously, the automobile had been largely a novelty -- a sort of plaything for the well-to-do. A number of things began happening almost simultaneously. Many people got into the business of today -- like Ford, Dodge, Chevrolet, Buick, Oldsmobile, and Cadillac. Competition, plus the success of Henry Ford in producing a low-cost, practical car (the Model T), placed automobile ownership within reach of the average family, leading to a dramatic change in American life.

Ford developed a simple design and the ability to mass-produce it at low cost. In addition, a simple financing system was adopted on the monthly installment plan.

The people responded with enthusiasm, and soon, almost every family owned an automobile of some make or description. The availability of a car quickly modified old habits and attitudes. What was previously impossible or impractical, suddenly, became both possible and practical. The automobile made one-day recreational trips for town residents possible and provided the flexibility of going to the county seat or some other larger town or city without being dependent upon rigid rail schedules. In many instances, the round trip, between two towns only ten miles apart, could not be made by train without an overnight stop. Suddenly, such a trip could be made in less than one hour each way.

There was one drawback. The roads were designed for horse-drawn vehicles. They were dirt, or better stated, were mud when it rained. Anyone planning a trip by car, made it contingent upon fair weather. In summer, this might mean postponement of a needed trip for a day or longer, but in winter and spring, it was another matter. Sometimes, roads were impassable for automobiles for weeks. It was still the world of the horse.

The clamor for road improvement was great, and state legislatures responded. The 1920's saw tremendous road-building effort. All-weather roads were the objective. First, they were coated with gravel. It was the quickest and least expensive, but concrete and asphalt soon followed.

The combination of the car and the all-weather road meant death to the small town. The need simply ceased to exist. The farmer could go a dozen miles by car much easier and quicker than five miles by horse and wagon. So could the townspeople. The larger towns offered more services and more activity.

Today, the town mentioned above is a ghost. Its once active business section has been reduced to one gasoline service station and a small grocery store. People still live in the houses that remain, but they are employed elsewhere. There is no longer a high school, for the automobile made possible the school bus. The bus, combined with the highways, brought consolidation of school districts. But more than schools have been consolidated. Markets, churches, community boundaries, social and recreational activities have all been affected. Just as an old washboard serves as testimony to the existence of a day before the electric washing machine, many small mid-western towns stand as eroding monuments to the era before the automobile.

Student Questions

1. Henry Ford did not make the first automobile. What was the important first that he did do?

2. How did the Model T change the kinds of entertainment people once enjoyed in small towns?

3. How did school change with the advent of better cars and roads?

4. What advantages did larger towns offer over small villages and towns?

5. How did the automobile have advantages over train travel?

6. How did the automobile make more leisure time available?

7. It has been said that the automobile made people less dependent on each other. How would you explain this statement?

"The Good Old Days" -- Or Were They?

Interview someone who is old enough to remember what life was like before the days of high technology, plastic, electronic games, television, and multiple gadgets. Ask this person the questions on these pages and others you may think of.

1. How did you heat your home?_____

_____

What kind of fuel did you use for heating and cooking?_____

_____

2. What did a workweek consist of in days and hours?_____

_____

3. How did you buy the necessary things: food, clothing, medicines, etc.?_____

_____

4. How did you get to work?_____

_____

To school?_____

Did your family own a car?_____

If so, do you remember the name of your family's first car?_____

_____

How much did it cost?_____

5. What kinds of entertainment did you enjoy?_____

_____

6. What was clothing made of?_____

How was it kept clean?_____

What kind of a laundry machine did you have?_____

How did you heat the water?_____

What were soaps like?_____

How did you dry clothes?_____

7. What were the eating facilities like in your school?_____

_____

The bathrooms?_____

What did you have for school supplies?_____

8. Today, plastics are used so much in packaging. What did you use?_____

Was milk delivered?_____

How did you keep food from spoiling?_____

9. What was your home lighted by?_____

10. Did your family go on vacation?_____

If so, how did they get there?_____

11. What were roads like then?_____

12. What happened to your old schoolhouse?_____

How did your school change with the coming of school buses?_____

_____

13. How do you think the car changed things in your town (or city)?_____

Activity 3 - The City of Windshields

The following is an excerpt taken from The Limits of the City, by Murray Bookchin, Harper and Row Publishers, Inc., New York,1974, pp. 68-71. The article shows the effect of the automobile on Los Angeles, California.

"...Los Angeles is normally seen through a windshield. Because of the city's enormous size, the car is the essential and unavoidable means of transportation: about 95 percent of travel in the metropolitan area is done by car. It is estimated that there is one automobile for every 2.5 people, compared with 3.5 in Detroit, the automotive capital of the United States. And these cars are in daily use, bringing wage earners to their jobs, children to schools, and shoppers to local stores. Roughly, 60 percent of the central city's land is devoted to parking lots, roads, and garages, in addition to the considerable area that is occupied by its multitude of gasoline and service stations.

It is not enough to say that Los Angeles is an overgrown suburb made possible by motor vehicles and freeways, for this suggests certain natural amenities -- trees, shrubs, and open fields -- that are a secondary value to the southern California metropolis. In Los Angeles, the automobile is not only a means of transportation, but a state of mind that shapes the citizen's sensibility toward his environment, life-style, and concept of space and time. So committed is the...Angelino to the motor vehicle, that a proposal to build a mass transit system for the city was resoundingly defeated in a popular referendum. To travel fifty or sixty miles to a choice restaurant -- possibly, driving two hours in order to while away one -- is often no more debatable an issue than to travel a smaller distance to and from work daily.... Not surprisingly, one finds that Los Angeles city authorities arrayed plastic "vegetation" along a stretch of freeway to replace shrubs that were perishing from air pollution. The reason for this inspired experiment was not lower costs; indeed, it would have been more expensive to vacuum-clean the synthetic product than periodically restore the real vegetation. Hard as it may be to believe, the civic authorities thought that the plastic "plants" were more "attractive" than real ones.

Gasoline exhausts from millions of motor vehicles produce air pollution problems in Los Angeles -- a city that is notoriously burdened by temperature inversions and photochemical smog.... The only administrative institution around which Los Angeles coheres (listens to) is its district-wide Air Pollution Control Board -- an agency formed to deal with a potentially lethal environment.... This board has enormous powers. Its three-stage "smog alert" system stipulates that it can bring all traffic, industrial activity, and even power generation to a virtual halt. Presumably, if the final alert -- a "general emergency" -- failed to cope with a pollution crisis, Angelinos might use their motor vehicles to flee to the mountains...."

Vocabulary

Angelino -- a person living in Los Angeles.

Photochemical smog -- a mixture of smoke and fog caused by modern automobile exhaust.

Student Questions

1. How can you explain the statement: Los Angeles is normally seen through a windshield?

2. When and how do the people of Los Angeles use their automobiles?

3. How has the automobile changed the appearance of Los Angeles?

4. Many large metropolitan areas have mass transit systems. Why has Los Angeles refused so far to construct one?

5. How has the automobile affected the Los Angelino's sense of time and space?

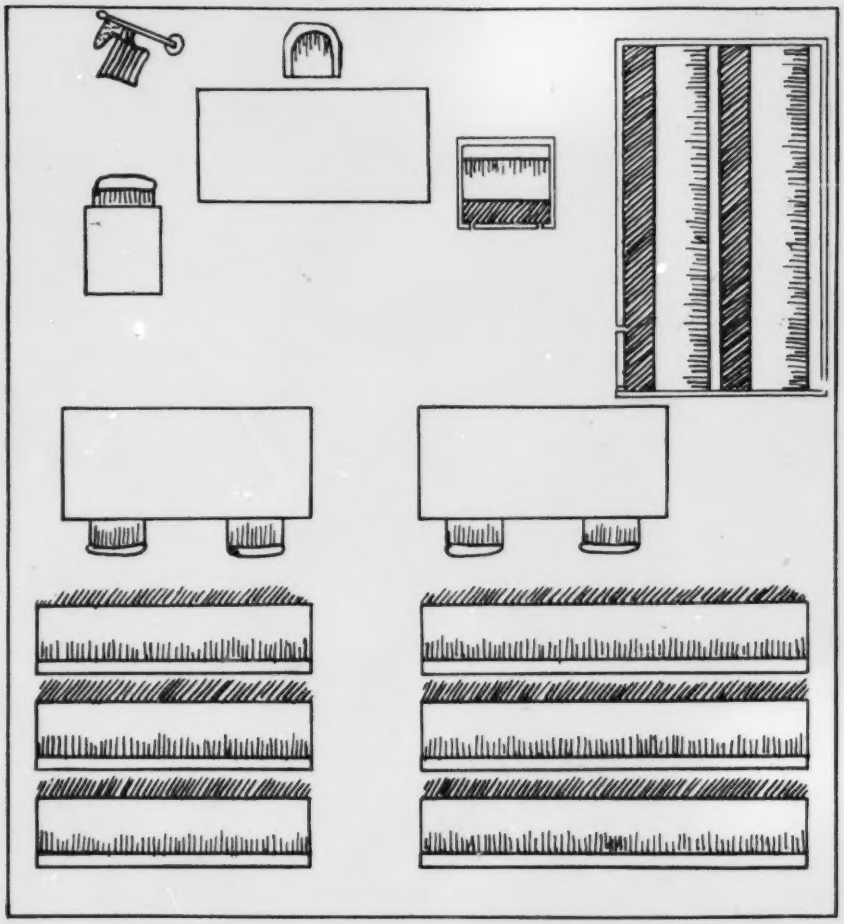
6. What is a major problem facing all citizens of Los Angeles because of the automobile?

7. What can the city do to solve this problem?

8. How has the city attempted to control smog?

9. Pretend you are a citizen of the city of Los Angeles or any large city. Write a letter to your mayor or city manager stating the problems caused by the automobile. State how you would solve the problem. What alternate transportations would you suggest? How would you encourage people to adopt your ideas?

Activity 4 - The Car on Trial



Outline of Steps in a Jury Trial

A. Selection of Jury

1. Voir Dire
2. Peremptory Challenge

B. Opening Statements

1. By Plaintiff's Counsel
2. By Defendant's Counsel

C. Presentation of Plaintiff's Case

1. Examination of Witnesses

a. Direct Examination
b. Cross-Examination
c. Redirect Examination
d. Recross-Examination

2. Introduction and Admission of Exhibits

D. Presentation of Defendant's Case

1. Examination of Witnesses

a. Direct Examination
b. Cross-Examination
c. Redirect Examination
d. Recross-Examination

2. Introduction and Admission of Exhibits

E. Presentation of Rebuttal

F. Instructions by the Court

G. Final Arguments

1. Plaintiff's Closing Arguments
2. Defendant's Arguments
3. Plaintiff's Rebuttal Arguments

H. Deliberation of Jury

I. Receipt of Verdict by Court

Duties of Clerk During Trial

A. Call case

B. Selection of Jury

1. Voir Dire Oath
2. Peremptory Challenge
3. Calling of the Jurors
4. Swear in the Jury

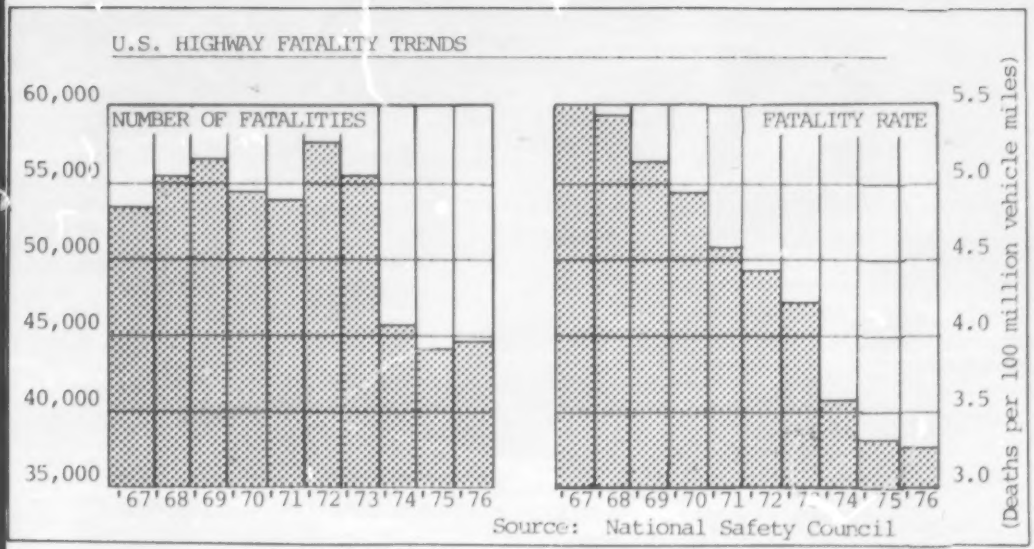
C. Swear in Witnesses and Mark Exhibits

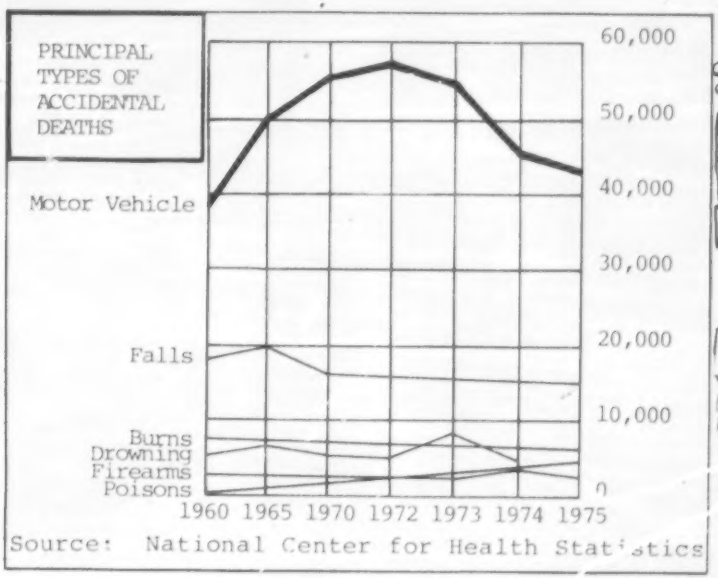
D. Swear in Bailiff, Prior to the Jury Leaving to Deliberate

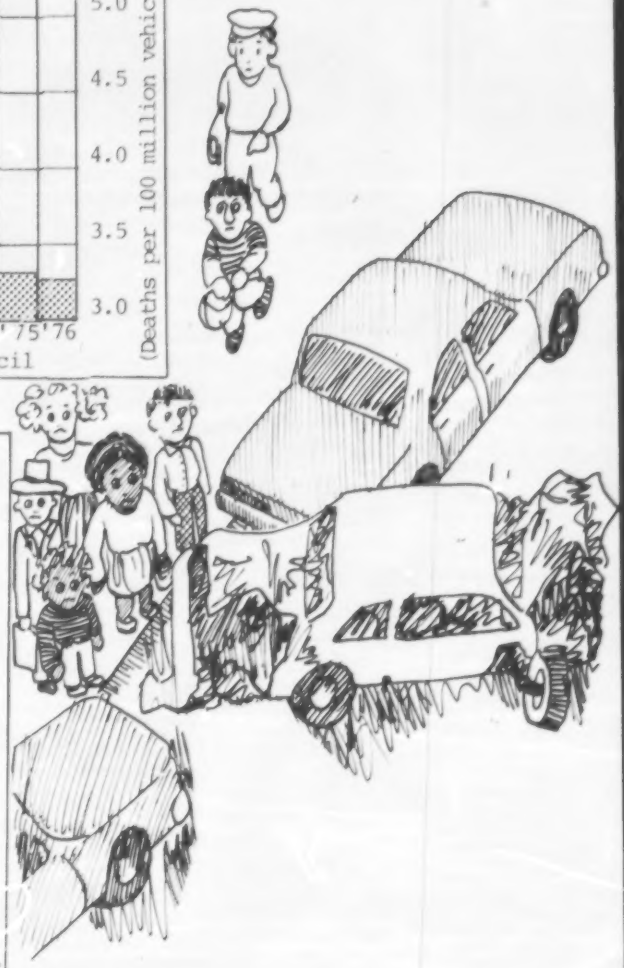
E. Receive and Record the Verdict

This page contains a sampling of the kinds of data and graphic presentation students might use to present as evidence before the jury. For example,

Headlines	1975 AUTO CRASH TOLL: 4 MILLION HURT AT COST OF $37 BILLION
Graphs	U.S. Highway Fatality Trends Principal Types of Accidental Deaths (Highway and Motor Vehicle Lead All the Others)
Tables	Auto Casualty Rates
Pictures	Show car collision.
Combination for Optimum Persuasive Devices	Car collision Graphs superimposed to show maximum effect of gruesome data (see sample, p.45).


U.S. HIGHWAY FATALITY TRENDS
NUMBER OF FATALITIES
FATALITY RATE
60,000
55,000
50,000
45,000
40,000
35,000
5.5
5.0
4.5
4.0
3.5
3.0
(Deaths per 100 million vehicle miles)
'67 '68 '69 '70 '71 '72 '73 '74 '75 '76
Source: National Safety Council


PRINCIPAL TYPES OF ACCIDENTAL DEATHS
Motor Vehicle
Falls
Burns
Drowning
Firearms
Poisons
60,000
50,000
40,000
30,000
20,000
10,000
0
1960 1965 1970 1972 1973 1974 1975
Source: National Center for Health Statistics



AUTO CASUALTY RATES

Rate Per 100 Million Vehicle Kilometers

	Vehicles Per 1,000 Pop.	Injuries ↓	Deaths ↘
Australia (1974)	435	93	3.6
Belgium (1972)	255	290	8.5
Canada (1971)	409	144	4.2
Denmark (1972)	281	92	4.0
Finland (1973)	219	77	5.0
France (1974)	328	157	6.2
Great Britain (1974)	284	134	2.9
Iceland (1973)	297	128	2.6
Italy (1972)	247	143	5.9
Japan (1974)	244	185	3.0
Netherlands (1974)	278	101	3.9
New Zealand (1973)	416	147	5.0
Norway (1974)	261	71	4.0
U.S.A. (1973)	545	135	2.6
West Germany (1974)	301	162	5.8

Source: International Road Federation

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